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(54) **VACUUM ROLL TRANSFER APPARATUS.**

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Description

The invention relates to a vacuum roll transfer apparatus for transferring a web extending through a paper machine, the apparatus being of the kind defined in the preamble of anyone of claims 1, 3 and 4. The invention also relates to a method of transferring a web extending through a paper machine, the method comprising the steps defined in the preamble of claim 5.

Such a vacuum roll transfer apparatus and such a method are known from GB-A-733242 which discloses a vacuum roll for use in the press section of a paper machine. This vacuum roll includes only two cavities, one of which is disclosed adjacent to a first end of the rotatable shell. It also includes a single damper which controls the flow of air between the two cavities such that when the damper is closed a high vacuum level is generated in the first cavity for facilitating threading of a tail of the web, and when it is open an equal low vacuum level is generated in both cavities for transferring the full width of the web from a forming wire to a felt. Since the web is still very wet in the press section, there is no risk for the web to flutter or shrink in the cross machine direction while it is in the press section. However, the web is subjected to the phenomena of sheet flutter and cross machine shrinkage when it is dried in the dryer section which is disposed downstream of the press section in a paper machine.

Sheet flutter and cross machine direction shrinkage is reduced in a dryer section of the kind disclosed in WO-A-8806204 of which the priority date is February 13, 1987 and the publication date is August 25, 1988.

As disclosed in WO-A-8806204, the dryer section includes a plurality of single tier dryer sections, each dryer section including at least two dryers with a vacuum transfer roll interposed between adjacent dryers.

The afore-mentioned dryer arrangement includes a dryer felt for each dryer section with the felt extending contiguously with the web alternately around each dryer and transfer roll. The partial vacuum applied to the vacuum roll provides a positive restraint to the web as the web and felt extend around the transfer roll with the felt being disposed between the web and the transfer roll. The vacuum roll includes a perforate shell and an internal duct arrangement with a seal or gasket disposed between the duct and the rotatable shell so that the vacuum can be concentrated in the vicinity of the wrapped portion of the transfer roll for urging the web into close conformity with the dryer felt. The afore-mentioned restraint helps to minimize cross directional shrinkage and to improve the sheet quality and uniformity. The level of sheet restraint, and hence sheet quality can be increased by increasing the vacuum that is applied to the sheet as it wraps around the vacuum roll.

The problem with increasing the vacuum is that the volume of air which is drawn into the roll and which must thereafter be exhausted from the roll is proportionally increased. Such increased flow rate coupled with increased vacuum levels causes an undesirable increase in the exhaust fan power requirements and additionally increases the amount of make up air which must be supplied to the dryer hood.

An object of the invention is to provide a vacuum roll transfer apparatus for use in a single tier dryer section and a method of transferring a web, the apparatus and method being of the kind defined in the preamble of anyone of claim 1, 3 and 4 and 5 respectively and being adapted to inhibit sheet flutter and cross machine direction shrinkage during transit of the web around the shell of the apparatus.

A solution of the problem is provided by the features of the characterizing portion of each of independent claims 1, 3, 4 and 5.

The present invention provides at least two internal flow restrictions. Such restrictions are located inside the roll near the outer edges thereof to allow the vacuum to be maintained at a high level adjacent to the edges or ends of the shell where the increased vacuum is most needed. Additionally, the arrangement of the present invention further allows the vacuum to be maintained at a lower level in between the edge or end portions of the roll shell where the increased vacuum is not required. Such an arrangement greatly reduces the volume of air which must be exhausted from the roll and thereby minimizes the exhaust fan horsepower.

Various embodiments of the invention will now be described by way of example and with reference to the accompanying drawings, in which: -

Figure 1 is a side-elevational view of a single-tier single felt dryer section incorporating a vacuum roll transfer apparatus according to the present invention;

Figure 2 is an enlarged sectional view of the vacuum roll transfer apparatus shown in figure 1, the section being taken on the line 2-2 of figure 1;

Figure 3 is a graph showing the respective vacuum levels along the length of the transfer roll shown in figure 2 with the control valve open and the dampers partially open;

Figure 4 is a sectional view similar to that shown in figure 2 but showing an alternative embodiment of the in-

vention;

Figure 5 is a sectional view similar to that shown in figure 2 but showing yet another embodiment of the present invention; and

Figure 6 is a sectional view similar to that shown in figure 2 but showing a further embodiment of the present invention in which the source of partial vacuum is connected to only one side of the duct.

Similar reference characters refer to similar parts throughout the various embodiments of the present invention.

Figure 1 is a side-elevational view of a single-tier, single felt dryer section generally designated 10. The dryer section 10 includes a first and a second dryer 12 and 14 respectively and a vacuum roll transfer apparatus generally designated 16 according to the present invention disposed therebetween. A felt F and a web W extend contiguously around the dryer 12, the vacuum roll 16 and the dryer 14 such that the felt is disposed between the web W and the vacuum roll transfer apparatus 16 as the web and felt extend around the vacuum roll 16. By this means as disclosed in WO-A-8806204, a positive restraint is applied to the web W by the vacuum roll 16 during transit of the web around the vacuum roll 16.

The vacuum roll transfer apparatus 16 is shown in more detail in figure 2 which is an enlarged sectional view taken on the line 2-2 of figure 1. The vacuum roll transfer apparatus 16 for drying the web W extending through the single-tier dryer section 10 of a papermachine includes a rotatable perforate shell 18 having a first and a second end 20 and 22 respectively.

A stationary duct 24 is disposed within and along the length of the shell 18 between the ends 20 and 22 of the shell 18. The duct 24 is connected to a source of partial vacuum 26 such as a fan and the duct 24 defines a plurality of holes 28, 29, 30, 31, 32, 33, 34, 35, 36 and 37 along the length thereof such that in use of the apparatus 10, when the duct 24 is connected to the source of partial vacuum 26, a partial vacuum is generated within a chamber 38 defined between the shell 18 and the duct 24.

Flow restricting means generally designated 40 are associated with the duct 24 for generating a greater vacuum level adjacent to at least one of the ends 20, 22 of the shell 18 for facilitating threading of a tail T of the web W.

More specifically, the duct 24 shown in figure 2 is coaxial with the shell 18 and the source of partial vacuum 26 is an exhaust fan connected to the duct 24 adjacent to the first and second ends 20 and 22 respectively of the shell 18.

The flow restricting means 40 includes a first and second controllable damper 42 and 44 respectively which may be butterfly valves connected by suitable means to actuating mechanisms 46 and 48 respectively.

The flow restricting means 40 further includes seal means generally designated 41 which extend circumferentially around the duct 24 and extend from the duct 24 to the perforate shell 18 for dividing the chamber 38 into a first cavity 43 which is disposed adjacent to the first end of the shell 18. The seal means 41 also divide the chamber 38 into a second cavity 45 which is disposed adjacent to the second end 22 of the shell 18. Furthermore, an intermediate cavity 47 is disposed between the first and the second cavities 43 and 45 respectively. The plurality of holes 28 to 37 connect the cavities 43, 45 and 47 to the source of partial vacuum 26.

The flow restricting means 40 also includes a control valve 50 which is disposed between the second damper 44 and the exhaust fan 26.

The arrangement is such that in use of the apparatus 10, when the control valve 50 is closed and the first damper 42 is closed, a greater vacuum level is generated within the first cavity 43 for facilitating threading of the tail T of the web W.

When the control valve 50 is open and the dampers 42 and 44 are closed, an intermediate vacuum level is generated within the cavities 43 and 45 for inhibiting fluttering of the lateral edges of the web W during transit of the web W around the shell 18.

When the control valve 50 is open and the dampers 42 and 44 respectively are partially open, a low vacuum level is generated within the intermediate cavity 47 and a slightly higher vacuum level is generated within the cavities 43 and 45 respectively for inhibiting fluttering of the lateral edges of the web W during transit of the web W around the shell 18.

Figure 3 is a graph showing the intermediate vacuum level adjacent to the first and the second ends of the shell and the low vacuum level between the dampers when the control valve 50 is open and the dampers 42 and 44 are partially open.

Figure 4 is a sectional view of an alternative embodiment of the present invention. It is similar to the view shown in figure 2 but instead of butterfly dampers the alternative embodiment includes an orifice plate or a drilled restrictor plate hereinafter referred to as a first flow restrictor plate 52 disposed adjacent to the first end 20A of the shell 18A. An orifice plate or a drilled restrictor plate hereinafter referred to as a second flow restrictor plate 54 is disposed adjacent to the second end 22A of the shell 18A. The plates 52 and 54 are spaced axially relative to each other for dividing the

duct 24A into a first enclosure 49 which is disposed adjacent to the first end 20A of the shell 18A, a second enclosure 51 disposed adjacent to the second and 22A of the shell 18A and an intermediate enclosure 53 disposed between the first and the second enclosures 49 and 51 respectively. Seal means generally designated 41A extend circumferentially around the duct 24A and extend from the duct 24A to the perforate shell 18A for dividing the chamber 38A into a first cavity 43A disposed adjacent to the first and 20A of the shell 18A. The seal means 41A also divides the chamber 38A into a second cavity 45A which is disposed adjacent to the second and 22A of the shell 18A. Furthermore, an intermediate cavity 47A is disposed between the first and the second cavities 43A and 45A. The plurality of holes 28A, 29A, 30A, 31A, 32A, 33A, 34A, 35A, 36A and 37A connect the cavities 43A, 45A and 47A to the source of partial vacuum.

Control valve means generally designated 50A is disposed between the second plate 54 and the source of partial vacuum 26A such that when the control valve 50A is closed, a high vacuum level is generated within the first enclosure 49 and the first cavity 43A for assisting threading of a tail TA of the web. When the control valve 50A is open, an intermediate vacuum level is generated within the first and second enclosures 49 and 51 respectively and the first and second cavities 43A and 45A respectively for inhibiting fluttering of the lateral edges of the web relative to the shell 18A.

Figure 5 shows another embodiment of the present invention which is similar to the embodiment shown in figure 2. However, the flow restricting means generally designated 40B further includes a plurality of restriction elements 56, 57, 58 and 59 which are spaced axially relative to each other and are disposed within the duct 24B between the first and second dampers 42B and 44B respectively such that when the control valve 50B is open and the dampers 42B and 44B are partially open, an equal vacuum level is generated within the first and second cavities 43B and 45B respectively and a low vacuum level is generated within the intermediate cavity 47B which is progressively greater towards the dampers 42B and 44B respectively due to the provision of the restriction elements 56 to 59.

As shown in figure 5, each of the restriction elements 56 to 59 defines an opening therein. However, the openings 61 and 63 defined by elements 56 and 59 respectively are larger than openings 65 and 67 defined by elements 57 and 58 respectively. By the provision of the openings 61, 63, 65 and 67 respectively, the low vacuum level generated within the intermediate cavity 47B becomes progressively greater towards the dampers 42B and 44B respectively.

Figure 6 shows a further embodiment of the present invention in which the source of partial vacuum 26C is connected only to the duct 24C adjacent to the first end 20C of the shell 18C. The duct 24C defines a first and a second pocket 62 and 64 respectively. The first pocket 62 is disposed adjacent to the first end 20C of the shell 18C. The second pocket 64 is disposed adjacent to the second and 22C of the shell 18C. The duct 24C also defines a conduit 66 which extends from the first pocket 62 to the second pocket 64 . Seal means generally designated 41C extend circumferentially around the duct 24C and extend from the duct 24C to the perforate shell 18C for dividing the chamber 38C into a first cavity 43C disposed adjacent to the first end 20C of the shell 18C, a second cavity 45C disposed adjacent to the second end 22C of the shell 18C and an intermediate cavity 47C disposed between the first and the second cavities 43C and 45C respectively. A plurality of holes 28C, 29C, 30C, 31C, 32C, 33C, 34C, 35C, 36C and 37C connect the cavities 43C, 45C and 47C respectively to the source of partial vacuum.

The flow restricting means generally designated 40C includes a controllable damper 42C disposed within the conduit 66 such that when the damper 42C is closed, a high vacuum level is generated within the first pocket 62 and the first cavity 43C for facilitating threading of a tail TC of the web. When the damper 42C is open, an equal vacuum level is generated within the first and second pockets 62 and 64 respectively and the first and second cavities 43C and 45C respectively for inhibiting fluttering of the lateral edges of the web during transit of the web around the shell.

In operation of the apparatus according to the present invention as shown in figures 2 and 3, when the control valve is closed and the dampers are closed, the greater vacuum level is operative adjacent to the first end of the shell so that when a narrow tail of the web is guided towards the shell, the tail will be guided around the shell to facilitate threading of the tail through the dryer section.

When the tail has been widened to a full width web, the control valve is opened and the dampers 42 and 44 are shut so that the fan 26 generates an equal and intermediate vacuum level adjacent to the ends 20 and 22 of the shell. Such intermediate vacuum level inhibits the lateral edges of the full width web from fluttering relative to the supporting felt F during transit of the web around the shell 18 and provides restraint to the web to prevent shrinkage during the drying process.

When control valve 50 is open and the dampers 42 and 44 are partially open, a low vacuum level is attained between the dampers 42 and 44.

The low vacuum level generates a low vacuum level within a pocket 74 defined by the first and the second dryers 12 and 14 and the felt F so that the web W is urged into close conformity with the felt during transit between the dryers 12 and 14 while a slightly higher vacuum level is generated adjacent to the respective ends of the shell for preventing fluttering of the edges of the web.

Operation of the apparatus as shown in figure 4 is similar to that of the embodiment of figures 2 and 3 except in that the movable dampers are replaced by first and second flow restrictor plates 52 and 54. Such substitution simplifies construction of the transfer roll apparatus but results in a slightly lower vacuum level for facilitating threading of the tail because the plates are always open.

The embodiment shown in figure 5 operates similarly to the embodiment shown in figure 2 except in that when the control valve 50B is open and the dampers are open, the restriction elements 56 to 59 have openings 61, 63, 65 and 67 therein, resulting in a progressive increase in the vacuum level from the center of the duct between elements 57 and 58 towards the dampers 42B and 44B respectively.

In operation of the further embodiment shown in figure 6, only one movable damper is required and the arrangement permits connection to the fan with only the front end of the duct so that when the damper is closed, a greater vacuum level is generated within the first pocket 62 and the first cavity 43C. When the damper 42C is open, an intermediate vacuum level is generated within the first and second pockets 62 and 64 and the first and second cavities 43C and 45C for holding the lateral edges of the web against the dryer felt.

In view of the plurality of holes 29C to 36C, a low vacuum level is attained within the intermediate cavity 47C when the damper 42C is open and this vacuum level results in a low vacuum level within the pocket 74 for holding the web against the felt during transit of the web between the adjacent dryers.

The present invention provides a simple vacuum transfer roll apparatus for enabling threading of the tail of a web without the need of threading ropes and also provides means for preventing the lateral edges of the web from fluttering relative to the felt during transit around the shell and also restrains the web from shrinking by providing a large holding force for holding the edges.

The present invention also provides means for holding the web against the felt during movement of the web in the draws between the respective dryers and the shell.

Claims

1. A vacuum roll transfer apparatus for transferring a web (W) extending through a paper machine, said apparatus comprising:

a rotatable perforate shell (18; 18B) having a first and a second end (20, 22; 20B, 22B);

a stationary duct (24; 24B) disposed within and along the length of said shell (18; 18B) between said ends (20, 22; 20B, 22B) of said shell (18; 18B), said duct (24; 24B) being connected to a source of partial vacuum (26; 26B), said duct (24; 24B) defining a plurality of holes (28-37; 28B-37B) along the length thereof such that in use of the apparatus (16), when said duct (24; 24B) is connected to said source of partial vacuum (26; 26B), a partial vacuum is generated within a chamber (38; 38B) defined between said shell (18; 18B) and said duct (24; 24B);

flow restricting means (40; 40B) for generating a greater vacuum level adjacent to at least one end (20, 22; 20B, 22B) of said shell (18; 18B) for facilitating threading of a tail (T; TB) of the web (W); and

seal means (41; 41B) extending circumferentially around said duct (24; 24B) and extending from said duct (24,; 24B) to said perforate shell (18; 18B) for dividing said chamber (38; 38B) into a plurality of cavities (43, 45, 47; 43B, 45B, 47B) comprising a first cavity (43; 43B) disposed adjacent to said first end (20; 20B) of said shell (18; 18B), and an intermediatew cavity (47; 47B) diposed adjacent to said first cavity (43; 43B);

said flow restricting means (40; 40B) including

damping means (42, 44; 42B, 44B) disposed within said duct (24; 24B), said damping means (42, 44; 42B, 44B) being controllable for restricting the flow of air through said duct (24; 24B);

said plurality of holes (28-37; 28B-37B) connecting said cavities (43, 45, 47; 43B, 45B, 47B) to said source of partial vacuum (26; 26B);

characterized in that, when said apparatus (16) is used in a single tier dryer section (10) of said paper machine, said cavities include a second cavity (45; 45B) disposed adjacent to said second end (22; 22B) of said shell (18; 18B), said intermediate cavity (47; 47B) being disposed between said first and second cavities (43, 45; 43B, 45B);

said duct (24; 24B) is connected to said source of partial vacuum (26; 26B) adjacent to said first and second ends (20, 22; 20B, 22B) of said shell (18, 18B);

said damping means comprise a first and a second damper (42, 44; 42B, 44B) disposed adjacent to said first and second ends (20, 22; 20B, 22B) of said shell (18; 18B) respectively; and

a control valve (50, 50B) for controlling the flow of air between said second damper (44; 44B) and said source of partial vacuum (26; 26B) is provided such that when said control valve (50; 50B) is closed and said first damper (42; 42B) is closed, a high vacuum level is generated within said first cavity (43; 43B) for facilitating threading of said tail (T; TB) of the web (W), when said control valve (50; 50B) is open and said first and second dampers (42, 44; 42B, 44B) are closed, an intermediate vacuum level is generated within said first and second cavities (43, 45; 43B, 45B) for inhibiting fluttering of the lateral edges of the web (W) during transit of the web (W) around said rotatable perforate shell (18; 18B), and when said control valve (50; 50B) is open and said first and second dampers (42, 44; 42B, 44B) are partially open, a low vacuum level is generated within said intermediate cavity (47; 47B).

2. A transfer apparatus as set forth in claim 1, wherein said flow restricting means (40B) further includes:

a plurality of restriction elements (56, 57, 58, 59) spaced axially relative to each other and disposed within said duct (24B) between said first and second dampers (42B, 44B) such that when said control valve (50B) is open and said dampers (42B, 44B) are partially open, an equal vacuum level is generated within said first and second cavities (43B, 45B) and a low vacuum level is generated within said intermediate cavity (47B) which is progressively greater towards said dampers (42B, 44B) due to the provision of said restriction elements (56 to 59).

3. A vacuum roll transfer apparatus for transferring a web (W) extending through a paper machine, said apparatus comprising:

a rotatable perforate shell (18A) having a first and second end (20A, 22A);

a stationary duct (24A) disposed within and along the length of said shell (18A) between said ends (20A, 22A) of said shell (18A), said duct (24A) being connected to a source of partial vacuum (26A), said duct (24A) defining a plurality of holes (28A-37A) along the length thereof such that in use of the apparatus (16A), when said duct (24A) is connected to said source of partial vacuum (26A), a partial vacuum is generated within a chamber (38A) defined between said shell (18A) and said duct (24A);

flow restricting means (40A) for generating a greater vacuum level adjacent to at least one end (20A, 22A) of said shell (18A) for facilitating threading of a tail (TA) of the web (W); and

seal means (41A) extending circumferentially around said duct (24A) and extending from said duct (24A) to said perforate shell (18A) for dividing said chamber (38A) into a plurality of cavities (43A, 45A, 47A) comprising a first cavity (43A) disposed adjacent to said first end (20A) of said shell (18A), and an intermediate cavity (47A) disposed adjacent to said first cavity (43A);

said flow restricting means (40A) including plate means (52, 54) disposed within said duct (24A), said plate means (52, 54) being arranged for restricting the flow of air through said duct (24A);

said plurality of holes (28A-37A) connecting said cavities (43A, 45A, 47A) to said source of partial vacuum (26A); characterized in that, when said apparatus (16A) is used in a single tier dryer section (10) of said paper machine, said cavities include a second cavity (45A) disposed adjacent to said second end (22A) of said shell (18A), said intermediate cavity (47A) being disposed between said first and second cavities (43A, 45A);

said duct (24A) is connected to said source of partial vacuum (26A) adjacent to said first and second ends (20A, 22A) of said shell (18A);

said plate means comprise a first flow restrictor plate (52) disposed within said duct (24A) and adjacent to said first end (20A) of said perforate shell (18A); and

a second flow restrictor plate (54) disposed within said duct (24A) adjacent to said second end (22A) of said shell (18A);

said first and second plates (52, 54) being spaced axially relative to-each other for dividing said duct (24A) into a first enclosure (49) disposed adjacent to said first end (20A) of said shell (18A), a second enclosure (51) disposed adjacent to said second end (22A) of said shell (18A) and an intermediate enclosure (53) disposed between said first and second enclosures (49, 51); and

a control valve (50A) is disposed between said second plate (54) and said source of partial vacuum (26A) such that when said control valve (50A) is closed, a high vacuum level is generated within said first enclosure (49) and said first cavity (43A) for assisting threading of a tail (TA) of the web (W), and when said control valve (50A) is open, an intermedi-

ate vacuum level is generated within said first and second enclosures (49, 51) and said first and second cavity (43A, 45A) for inhibiting fluttering of the lateral edges of the web relative to said shell (18A).

4. A vacuum roll transfer apparatus for transferring a web (W) extending through a paper machine, said apparatus comprising:

a rotatable perforate shell (18C) having a first and a second end (20C, 22C);

a stationary duct (24C) disposed within and along the length of said shell (18C) between said ends (20C, 22C) of said shell (18C), said duct (24C) being connected to a source of partial vacuum (26C), said duct (24C) defining a plurality of holes (28C-37C) along the length thereof such that in use of the apparatus, when said duct (24C) is connected to said source of partial vacuum (26C), a partial vacuum is generated within a chamber (38C) defined between said shell (18C) and said duct (24C);

flow restricting means (40C) for generating a greater vacuum level adjacent to at least one end (20C, 22C) of said shell (18C) for facilitating threading of a tail (TC) of the web (W); and

seal means (41C) extending circumferentially around said duct (24C) and extending from said duct (24C) to said perforate shell (18C) for dividing said chamber (38C) into a plurality of cavities (43C, 45C, 47C) comprising a first cavity (43C) disposed adjacent to said first end (20C) of said shell (18C) and an intermediate cavity (47C) disposed adjacent to said first cavity (43C);

said flow restricting means include

a controllable damper (42C) disposed within said duct (24C), said damper (42C) being controllable for restricting the flow of air through said duct (24C);

said plurality of holes (28C-37C) connecting said cavities (43C, 45C, 47C) to said source of partial vacuum (26C); said duct (24C) being connected to said source of partial vacuum (26C) adjacent to said first end (20C) of said shell (18C);

characterized in that, when said apparatus is used in a single tier dryer section (10) of said paper machine, said cavities comprise a second cavity (45C) disposed adjacent to said second end (22C) of said shell (18C), said intermediate cavity (47C) being disposed between said first and second cavities (43C, 45C, 47C);

said duct (24C) defines a first and second pocket (62, 64), said first pocket (62) being disposed adjacent to said first end (20C) of said shell (18C), said second pocket (64) being disposed adjacent to said second end (22C) of said shell (18C), said duct (24C) also defining a conduit (66) extending from said first to said second pocket (62, 64);

said controllable damper (42C) is disposed within said conduit (66) such that when said damper (42C) is closed, a high vacuum level is generated within said first pocket (62) and said first cavity (43C) for facilitating threading of a tail (TC) of the web (W), when said damper (42C) is open, an equal vacuum level is generated within said first and second pockets (62, 64) and said first and second cavities (43C, 45C) for inhibiting fluttering of the lateral edges of the web during transit of the web (WC) around said shell (18C).

5. A method of transferring a web (W) extending through a paper machine, said method comprising the steps of:

guiding the web (W) around a rotatable perforate shell (18) of a vacuum roll transfer apparatus (16), the shell having a first and a second end (20; 22);

connecting both ends of a stationary duct (24) disposed within and along the length of the shell (18) to a source of partial vacuum (26), said duct (24) defining a plurality of holes (28-37) along the length thereof so that the partial vacuum is generated within a chamber (38) defined between said shell (18) and said duct (24);

said chamber (38) being divided by seal means (41) into a plurality of cavities (43, 45, 47) comprising a first cavity (43) disposed adjacent to said first end (20) of said shell (18), and an intermediate cavity (47) disposed adjacent to said first cavity (43);

operating damping means (42, 44) disposed within said duct (24) for restricting the flow of air through said duct (24) so as to generate a greater vacuum level adjacent to said one end (20, 22) of the shell (18) for facilitating threading of a tail (T) of the web (W);

characterized by

partially closing a first damper (42) disposed within said duct (24) adjacent to said first end (20) of the shell (18);

partially closing a second damper (44) disposed within said duct (24) adjacent to said second end (22) of the shell (18); and

opening a control valve (50) disposed between the second damper (44) and the source of partial vacuum (26) for generating a low vacuum level in said intermediate cavity (47) and a higher vacuum level in said first cavity (43) and a second cavity (45) which is dis-

posed adjacent to said second end (22) of said shell (18), for inhibiting fluttering of the lateral edges of the web (W) during transit of the web (W) around the shell (18) in a single tier dryer section (10).

Patentansprüche

1. Saugwalzen-Überführungsvorrichtung zum Überführen einer sich durch eine Papiermaschine erstreckenden Bahn (W), wobei die Vorrichtung folgendes aufweist:
einen drehbaren gelochten Mantel (18; 18B), der ein erstes und ein zweites Ende (20, 22; 20B, 22B) hat;
eine feststehende Rohrleitung (24; 24B), die innerhalb und über die Länge des Mantels (18; 18B) zwischen den Enden (20, 22; 20B, 22B) des Mantels (18; 18B) angeordnet ist, wobei die Rohrleitung (24; 24B) mit einem Unterdruckerzeuger (26; 26B) verbunden ist, wobei die Rohrleitung (24; 24B) eine Vielzahl von Löchern (28 - 37; 28B - 37B) über ihre Länge hat, derart, daß in Gebrauch der Vorrichtung (16), wenn die Rohrleitung (24; 24B) mit dem Unterdruckerzeuger (26; 26B) verbunden ist, ein Unterdruck in einer Kammer (38; 38B) erzeugt wird, die zwischen dem Mantel (18; 18B) und der Rohrleitung (24; 24B) gebildet ist;
eine Drosseleinrichtung (40; 40B) zum Erzeugen eines größeren Unterdrucks neben mindestens einem Ende (20, 22; 20B, 22B) des Mantels (18; 18B), um das Einfädeln einer Spitze (T; TB) der Bahn (W) zu erleichtern; und
eine Dichtungseinrichtung (41; 41B), die sich in Umfangsrichtung um die Rohrleitung (24; 24B) herum erstreckt und sich von der Rohrleitung (24; 24B) zu dem gelochten Mantel (18; 18B) erstreckt, um die Kammer (38; 38B) in eine Vielzahl von Hohlräumen (43, 45, 47; 43B, 45B, 47B) einzuteilen, die einen ersten Hohlraum (43, 43B), der neben dem ersten Ende (20; 20B) des Mantels (18; 18B) angeordnet ist, und einen Zwischenhohlraum (47; 47B), der neben dem ersten Hohlraum (43; 43B) angeordnet ist, aufweist;
wobei die Drosseleinrichtung (40; 40B) eine Sperreinrichtung (42, 44; 42B, 44B) beinhaltet, die in der Rohrleitung (24; 24B) angeordnet ist, wobei die Sperreinrichtung (42, 44; 42B, 44B) steuerbar ist, um den Luftstrom durch die Rohrleitung (24; 24B) zu drosseln;
wobei die Vielzahl von Löchern (28 - 37; 28B - 37B) die Hohlräume (43, 45, 47; 43B, 45B, 47B) mit dem Unterdruckerzeuger (26; 26B) verbindet;
dadurch gekennzeichnet, daß, wenn die Vorrichtung (16) in einer einreihigen Trockenpartie (10) der Papiermaschine verwendet wird, die Hohlräume einen zweiten Hohlraum (45; 45B) beinhalten, der neben dem zweiten Ende (22; 22B) des Mantels (18; 18B) angeordnet ist, wobei der Zwischenhohlraum (47; 47B) zwischen dem ersten und zweiten Hohlraum (43, 45; 43B, 45B) angeordnet ist;
die Rohrleitung (24; 24B) mit dem Unterdruckerzeuger (26; 26B) neben dem ersten und zweiten Ende (20, 22; 20B, 22B) des Mantels (18; 18B) verbunden ist;
die Sperreinrichtung eine erste und eine zweite Klappe (42, 44; 42B, 44B) aufweist, die neben dem ersten bzw. zweiten Ende (20, 22; 20B, 22B) des Mantels (18; 18B) angeordnet sind; und
ein Steuerventil (50, 50B) zum Steuern des Luftstromes zwischen der zweiten Klappe (44; 44B) und dem Unterdruckerzeuger (26; 26B) vorgesehen ist, derart, daß wenn das Steuerventil (50; 50B) geschlossen ist und die erste Klappe (42; 42B) geschlossen ist, ein hoher Unterdruck in dem ersten Hohlraum (43; 43B) erzeugt wird, um das Einfädeln der Spitze (T; TB) der Bahn (W) zu erleichtern, wenn das Steuerventil (50; 50B) offen ist und die erste und zweite Klappe (42, 44; 42B, 44B) geschlossen sind, ein mittlerer Unterdruck in dem ersten und zweiten Hohlraum (43, 45; 43B, 45B) erzeugt wird, um das Flattern der Seitenränder der Bahn (W) während des Laufs der Bahn (W) um den drehbaren gelochten Mantel (18; 18B) herum zu unterbinden, und wenn das Steuerventil (50; 50B) offen ist und die erste und zweite Klappe (42, 44; 42B, 44B) teilweise offen sind, ein geringer Unterdruck in dem Zwischenhohlraum (47; 47B) erzeugt wird.

2. Überführungsvorrichtung nach Anspruch 1, bei welcher die Drosseleinrichtung (40B) ferner folgendes einschließt:
eine Vielzahl von Drosselelementen (56, 57, 58, 59), die axial voneinander beabstandet sind und in der Rohrleitung (24B) zwischen der ersten und zweiten Klappe (42B, 44B) angeordnet sind, derart, daß wenn das Steuerventil (50B) offen ist und die Klappen (42B, 44B) teilweise offen sind, ein gleicher Unterdruck in dem ersten und zweiten Hohlraum (43B, 45B) erzeugt wird und ein geringer Unterdruck in dem Zwischenhohlraum (47B) erzeugt wird, der infolge der Drosselelemente (56 - 59) zunehmend größer in Richtung der Klappen (42B, 44B) wird.

3. Saugwalzen-Überführungsvorrichtung zum Überführen einer sich durch eine Papiermaschine erstreckenden Bahn (W), wobei die Vorrichtung folgendes aufweist:
einen drehbaren gelochten Mantel (18A), der ein erstes und zweites Ende (20A, 22A) hat;
eine feststehende Rohrleitung (24A), die innerhalb und über die Länge des Mantels (18A) zwischen den Enden (20A, 22A) des Mantels (18A) angeordnet ist, wobei die Rohrleitung (24A) mit einem Unterdruckerzeuger (26A) verbunden ist, wobei die Rohrleitung (24A) eine Vielzahl von Löchern (28A - 37A) über ihre Länge hat, derart, daß in Gebrauch der Vorrichtung (16A), wenn die Rohrleitung (24A) mit dem Unterdruckerzeuger (26A) verbunden ist, ein Unterdruck in einer Kammer (38A) erzeugt wird, die zwischen dem Mantel (18A) und der Rohrleitung (24A) gebildet ist;
eine Drosseleinrichtung (40A) zum Erzeugen eines größeren Unterdrucks neben mindestens einem Ende (20A, 22A) des Mantels (18A), um das Einfädeln einer Spitze (TA) der Bahn (W) zu erleichtern; und
eine Dichtungseinrichtung (41A), die sich in Umfangsrichtung um die Rohrleitung (24A) herum erstreckt und sich von der Rohrleitung (24A) zu dem gelochten Mantel (18A) erstreckt, um die Kammer (38A) in eine Vielzahl von Hohlräumen (43A, 45A, 47A) einzuteilen, die einen ersten Hohlraum (43A), der neben dem ersten Ende (20A) des Mantels (18A) angeordnet ist, und einen Zwischenhohlraum (47A), der neben dem ersten Hohlraum (43A) aufweist;
wobei die Drosseleinrichtung (40A) eine Platteneinrichtung (52, 54) aufweist, die in der Rohrleitung (24A) angeordnet ist, wobei die Platteneinrichtung (52, 54) dafür ausgebildet ist, den Luftstrom durch die Rohrleitung (24A) zu drosseln;
wobei die Vielzahl von Löchern (24A - 37A) die Hohlräume (43A, 45A, 47A) mit dem Unterdruckerzeuger (26A) verbindet;
dadurch gekennzeichnet, daß, wenn die Vorrichtung (16A) in einer einreihigen Trockenpartie (10) der Papiermaschine verwendet wird, die Hohlräume einen zweiten Hohlraum (45A) aufweisen, der neben dem zweiten Ende (22A) des Mantels (18A) angeordnet ist, wobei der Zwischenhohlraum (47A) zwischen dem ersten und zweiten Hohlraum (43A, 45A) angeordnet ist;
wobei die Rohrleitung (24A) mit dem Unterdruckerzeuger (26A) neben dem ersten und zweiten Ende (20A, 22A) des Mantels (18A) verbunden ist;
wobei die Platteneinrichtung eine erste Drosselplatte (52) aufweist, die in der Rohrleitung (24A) und neben dem ersten Ende (20A) des gelochten Mantels (18A) angeordnet ist; und
eine zweite Drosselplatte (54) aufweist, die in der Rohrleitung (24A) neben dem zweiten Ende (22A) des Mantels (18A) angeordnet ist;
wobei die erste und zweite Platte (52, 54) axial voneinander beabstandet sind, um die Rohrleitung (24A) in ein erstes Gehäuse (49), das neben dem ersten Ende (20A) des Mantels (18A) angeordnet ist, ein zweites Gehäuse (51), das neben dem zweiten Ende (22A) des Mantels (18A) angeordnet ist, und ein Zwischengehäuse (53), das zwischen dem ersten und zweiten Gehäuse (49, 51) angeordnet ist, einzuteilen; und
ein Steuerventil (50A) zwischen der zweiten Platte (54) und dem Unterdruckerzeuger (26A) angeordnet ist, derart, daß, wenn das Steuerventil (50A) geschlossen ist, ein hoher Unterdruck in dem ersten Gehäuse (49) und dem ersten Hohlraum (43A) erzeugt wird, um das Einfädeln einer Spitze (TA) der Bahn (W) zu unterstützen, und wenn das Steuerventil (50A) offen ist, ein mittlerer Unterdruck in dem ersten und zweiten Gehäuse (49, 51) und dem ersten und zweiten Hohlraum (43A, 45A) erzeugt wird, um das Flattern der Seitenkanten der Bahn bezüglich des Mantels (18A) zu unterbinden.

4. Saugwalzen-Überführungsvorrichtung zum Überführen einer sich durch eine Papiermaschine erstreckenden Bahn (W), wobei die Vorrichtung folgendes aufweist:
einen drehbaren gelochten Mantel (18C), der ein erstes und ein zweites Ende (20C, 22C) hat;
eine feststehende Rohrleitung (24C), die innerhalb und über die Länge des Mantels (18C) zwischen den Enden (20C, 22C) des Mantels (18C) angeordnet ist, wobei die Rohrleitung (24C) mit einem Unterdruckerzeuger (26C) verbunden ist, wobei die Rohrleitung (24C) eine Vielzahl von Löchern (28C - 37C) über ihre Länge hat, derart, daß im Gebrauch der Vorrichtung, wenn die Rohrleitung (24C) mit dem Unterdruckerzeuger (26C) verbunden ist, ein Unterdruck in einer Kammer (38C) erzeugt wird, die zwischen dem Mantel (18C) und der Rohrleitung (24C) gebildet ist;
eine Drosseleinrichtung (40C) zum Erzeugen eines größeren Unterdrucks neben mindestens einem Ende (20C, 22C), um das Einfädeln einer Spitze (TC) der Bahn (W) zu erleichtern; und
eine Dichtungseinrichtung (41C), die sich in Umfangsrichtung um die Rohrleitung (24C) herum erstreckt und sich von der Rohrleitung

(24C) zu dem gelochten Mantel (18C) erstreckt, um die Kammer (38C) in eine Vielzahl von Hohlräumen (43C, 45C, 47C) einzuteilen, die einen ersten Hohlraum (43C), der neben dem ersten Ende (20C) des Mantels (18C) angeordnet ist, und einen Zwischenhohlraum (47C), der neben dem ersten Hohlraum (43C) angeordnet ist, aufweist;
wobei die Drosseleinrichtung
eine steuerbare Klappe (42C) aufweist, die in der Rohrleitung (24C) angeordnet ist, wobei die Klappe (42C) steuerbar ist, um den Luftstrom durch die Rohrleitung (24C) zu drosseln;
wobei die Vielzahl von Löchern (28C - 37C) die Hohlräume (43C, 45C, 47C) mit dem Unterdruckerzeuger (26C) verbindet;
wobei die Rohrleitung (24C) mit dem Unterdruckerzeuger (26C) neben dem ersten Ende (20C) des Mantels (18C) verbunden ist;
dadurch gekennzeichnet, daß, wenn die Vorrichtung in einer einreihigen Trockenpartie (10) der Papiermaschine verwendet wird, die Hohlräume einen zweiten Hohlraum (45C) aufweisen, der neben dem zweiten Ende (42C) des Mantels (18C) angeordnet ist, wobei der Zwischenhohlraum (47C) zwischen dem ersten und zweiten Hohlraum (43C, 45C, 47C) angeordnet ist,
die Rohrleitung (24C) eine erste und zweite Tasche (62, 64) bildet, wobei die erste Tasche (62) neben dem ersten Ende (20C) des Mantels (18C) angeordnet ist, die zweite Tasche (64) neben dem zweiten Ende (22C) des Mantels (18C) angeordnet ist, wobei die Rohrleitung (24C) auch einen Kanal (66) bildet, der sich von der ersten zu der zweiten Tasche (62, 64) erstreckt;
die steuerbare Klappe (42C) in dem Kanal (66) angeordnet ist, derart, daß, wenn die Klappe (42C) geschlossen ist, ein hoher Unterdruck in der ersten Tasche (62) und dem ersten Hohlraum (43C) erzeugt wird, um das Einfädeln einer Spitze (TC) der Bahn (W) zu erleichtern, wenn die Klappe (42C) offen ist, ein gleicher Unterdruck in der ersten und zweite Tasche (62, 64) und dem ersten und zweiten Hohlraum (43C, 45C) erzeugt wird, um das Flattern der Seitenkanten der Bahn während des Laufs der Bahn (WG) um den Mantel (18C) herum zu unterbinden.

5. Verfahren zum Überführen einer sich durch eine Papiermaschine erstreckenden Bahn (W), wobei das Verfahren die folgenden Schritte aufweist:
Leiten der Bahn (W) um einen drehbaren gelochten Mantel (18) einer Saugwalzen-Überführungsvorrichtung (16) herum, wobei der Mantel ein erstes und ein zweites Ende (20, 22) hat;
Verbinden der beiden Enden einer feststehenden Rohrleitung (24), die innerhalb und über die Länge des Mantels (18) angeordnet ist, mit einem Unterdruckerzeuger (26), wobei die Rohrleitung (24) eine Vielzahl von Löchern (28 - 37) über ihre Länge hat, so daß der Unterdruck in einer Kammer (38) erzeugt wird, die zwischen dem Mantel (18) und der Rohrleitung (24) gebildet ist;
wobei die Kammer (38) durch eine Dichtungseinrichtung (41) in eine Vielzahl von Hohlräumen (43, 45, 47) eingeteilt ist, die einen ersten Hohlraum (43), der neben dem ersten Ende (20) des Mantels (18) angeordnet ist, und einen Zwischenhohlraum (47), der neben dem ersten Hohlraum (43) angeordnet ist, aufweist;
Betätigen von einer Sperreinrichtung (42, 44), die in der Rohrleitung (24) angeordnet ist, um den Luftstrom durch die Rohrleitung (24) zu drosseln, um einen größeren Unterdruck neben dem einen Ende (20, 22) des Mantels (18) zu erzeugen, um das Einfädeln einer Spitze (T) der Bahn (W) zu erleichtern;
gekennzeichnet durch
teilweises Schließen einer ersten Klappe (42), die in der Rohrleitung (24) neben dem ersten Ende (20) des Mantels (18) angeordnet ist;
teilweises Schließen einer zweiten Klappe (44), die in der Rohrleitung (24) neben dem zweiten Ende (22) des Mantels (18) angeordnet ist; und
Öffnen eines Steuerventils (50), das zwischen der zweiten Klappe (44) und dem Unterdruckerzeuger (26) angeordnet ist, um einen niedrigen Unterdruck in dem Zwischenhohlraum (47) und einen höheren Unterdruck in dem ersten Hohlraum (43) und einem zweiten Hohlraum (45) zu erzeugen, der neben dem zweiten Ende (22) des Mantels (18) angeordnet ist, um das Flattern der Seitenkanten der Bahn (W) während des Laufs der Bahn (W) um den Mantel (18) herum in einer einreihigen Trokkenpartie (10) zu unterbinden.

Revendications

1. Appareil de transfert à cylindre à vide pour transférer une nappe s'étendant à travers une machine à papier, cet appareil comprenant une coquille perforée rotative (18;18B) ayant une première et une seconde extrémités (20,22;20B,22B), un conduit stationnaire (24;24B) disposé à l'intérieur de la coquille (18;18B) et suivant la longueur de celle-ci, entre les extrémités (20,22;20B,22B) de la coquille (18;18B), ce conduit (24;24B) étant relié à une source de vide partiel (26;26B), le conduit (24;24B) définissant une pluralité de

trous (28-37;28B-37B) suivant sa longueur de telle façon que, lors de l'utilisation de l'appareil (16), lorsque le conduit (24;24B) est relié à la source de vide partiel (26;26B), un vide partiel soit créé dans une chambre (38;38B) définie entre la coquille (18;18B) et le conduit (24;24B), un moyen de restriction de l'écoulement (40;40B) pour produire un niveau de vide plus poussé à proximité immédiate d'au moins une extrémité (20,22;20B,22B) de la coquille (18;18B), afin de faciliter l'enfilage d'une amorce (T;TB) de la nappe (W), et des moyens d'étanchéité (41;41B) s'étendant dans le sens circonférentiel autour du conduit (24;24B) et s'étendant à partir de ce conduit (24;24B) jusqu'à la coquille perforèe (18;18B), afin de diviser la chambre (38;38B) en une pluralité de cavités (43,45,47;43B,45B,47B) comprenant une première cavité (43;43B) adjacente à la première extrémité (20;20B) de la coquille (18;18B), et une cavité intermédiaire (47;47B) adjacente à la première cavité (43;43B), le moyen de restriction de l'écoulement (40;40B) comportant un moyen à registre (42,44;42B,44B) disposé à l'intérieur du conduit (24;24B), ce moyen à registre (42,44;42B,44B) pouvant être commandé pour restreindre l'écoulement de l'air à travers le conduit (24;24B), la pluralité de trous (28-37;28B-37B) connectant les cavités (43,45,47;43B,45B,47B) à la source de vide partiel (26;26B), caractérisé en ce que, lorsque l'appareil (16) est utilisé dans une section de sécherie à un seul étage (10) de la machine à papier, les cavités comportent une seconde cavité (45;45B) adjacente à la seconde extrémité (22;22B) de la coquille (18;18B), la cavité intermédiaire (47;47B) étant disposée entre les première et seconde cavités (43,45,;43B,45B), le conduit (24;24B) est relié à la source de vide partiel (26;26B) en un endroit adjacent aux première et seconde extrémités (20,22;20B,22B) de la coquille (18;18B), le moyen à registre comprend un premier et un second registres (42,44;42A,44B) respectivement voisins des première et seconde extrémités (20,22;20B,22B) de la coquille (18; 18B), et une vanne de commande (50,50B), destinée à commander l'écoulement de l'air entre le second registre (44;44B) et la source de vide partiel (26;26B), est prévue de telle façon que, lorsque la vanne de commande (50,50B) est fermée et le premier registre (42;42B) est fermé, un niveau de vide élevé soit produit dans la première cavité (43;43B), afin de faciliter l'enfilage l'amorce (T;TB) de la nappe (W), que, lorsque la vanne de commande (50,50B) est ouverte et les premier et second registres (42,44;42B,44B) sont fermés, un niveau de vide intermédiaire soit produit dans les première et seconde cavités (43,45;43B,45B), afin d'empêcher un flottement des bords latéraux de la nappe (W) pendant le transit de cette nappe (W) autour de la coquille perforée rotative (18;18B), et que, lorsque la vanne de commande (50,50B) est ouverte et les premier et second registres (42,44;42B,44B) sont ouverts partiellement, un niveau de vide bas soit produit dans la cavité intermédiaire (47;47B).

2. Appareil de transfert suivant la revendication 1 caractérisé en ce que le moyen de restriction de l'écoulement (40B) comporte en outre une pluralité d'éléments de restriction (56,57,58,59) espacés axialement les uns des autres et disposés à l'intérieur du conduit (24B), entre les premier et second registres (42B,44B), de telle façon que, lorsque la vanne de commande (50B) est ouverte et les registres (42B,44B) sont partiellement ouverts, un niveau de vide égal soit produit dans les première et seconde cavités (43B,45B) et qu'un niveau de vide bas soit produit dans la cavité intermédiaire (47B), ce dernier niveau de vide allant progressivement en croissant en direction des registres (42B,44B) par suite de la prévision des éléments de restriction (56 à 59).

3. Appareil de transfert à cylindre à vide pour transférer une nappe s'étendant à travers une machine à papier, cet appareil comprenant une coquille perforée rotative (18A) ayant une première et une seconde extrémités (20A,22A), un conduit stationnaire (24A) disposé à l'intérieur de la coquille (18A) et suivant la longueur de celle-ci, entre les extrémités (20A,22A) de la coquille (18A), ce conduit (24A) étant relié à une source de vide partiel (26A), le conduit (24A) définissant une pluralité de trous (28A-37A) suivant sa longueur de telle façon que, lors de l'utilisation de l'appareil (16A), lorsque le conduit (24A) est relié à la source de vide partiel (26A), un vide partiel soit créé dans une chambre (38A) définie entre la coquille (18A) et le conduit (24A), un moyen de restriction de l'écoulement (40A) pour produire un niveau de vide plus poussé à proximité immédiate d'au moins une extrémité (20A,22A) de la coquille (18A), afin de faciliter l'enfilage d'une amorce (TA) de la nappe (W), et des moyens d'étanchéité (41A) s'étendant dans le sens circonférentiel autour du conduit (24A) et s'étendant à partir de ce conduit (24A) jusqu'à la coquille perforée (18A), afin de diviser la chambre (38A) en une pluralité de cavités (43A,45A,47A) comprenant une première cavité (43A) adja-

cente à la première extrémité (20A) de la coquille (18A), et une cavité intermédiaire (47A) adjacente à la première cavité (43A), le moyen de restriction de l'écoulement (40A) comportant un moyen à plaques (52,54) disposé dans le conduit (24A), ce moyen à plaques (52,54) étant agencé de manière à restreindre l'écoulement de l'air à travers le conduit (24A), la pluralité de trous (28A-37A) connectant les cavités (43A,45A,47A) à la source de vide partiel (26A), caractérisé en ce que, lorsque l'appareil (16A) est utilisé dans une section de sécherie à un seul étage (10) de la machine à papier, les cavités comportent une seconde cavité (45A) adjacente à la seconde extrémité (22A) de la coquille (18A), la cavité intermédiaire (47A) étant disposée entre les première et seconde cavités (43A,45A), le conduit (24A) est relié à la source de vide partiel (26A) en un endroit adjacent aux première et seconde extrémités (20A,22A) de la coquille (18A), le moyen à plaques comprend une première plaque de restriction de l'écoulement (52) disposée dans le conduit (24A) et voisine de la première extrémité (20A) de la coquille perforée (18A), et une seconde plaque de restriction de l'écoulement (54) disposée dans le conduit (24A) et adjacente à la seconde extrémité (22A) de la coquille (18A), ces première et seconde plaques (52,54) étant espacées axialement l'une de l'autre afin de diviser le conduit (24A) en une première enceinte (49) adjacente à la première extrémité (20A) de la coquille (18A), une seconde enceinte (51) adjacente à la seconde extrémité (22A) de la coquille (18A) et une enceinte intermédiaire (53) située entre les première et seconde enceintes (49,51) et une vanne de commande (50A) est disposée entre la seconde plaque (54) et la source de vide partiel (26A) de telle façon que, lorsque la vanne de commande (50A) est fermée, un niveau de vide élevé soit produit dans la première enceinte (49) et dans la première cavité (43A) afin d'aider à l'enfilage d'une amorce (TA) de la nappe (W), et que, lorsque la vanne de commande (50A) est ouverte, un niveau de vide intermédiaire soit produit dans les première et seconde enceintes (49,51) et dans les première et seconde cavités (43A,45A) afin d'empêcher un flottement des bords latéraux de la nappe par rapport à la coquille (18A).

4. Appareil de transfert à cylindre à vide pour transférer une nappe s'étendant à travers une machine à papier, cet appareil comprenant une coquille perforée rotative (18C) ayant une première et une seconde extrémités (20C,22C), un conduit stationnaire (24C) disposé à l'intérieur de la coquille (18C) et suivant la longueur de celle-ci, entre les extrémités (20C,22C) de la coquille (18C), ce conduit (24C) étant relié à une source de vide partiel (26C), le conduit (24C) définissant une pluralité de trous (28C-37C) suivant sa longueur de telle façon que, lors de l'utilisation de l'appareil, lorsque le conduit (24C) est relié à la source de vide partiel (26C), un vide partiel soit créé dans une chambre (38C) définie entre la coquille (18C) et le conduit (24C), un moyen de restriction de l'écoulement (40C) pour produire un niveau de vide plus poussé à proximité immédiate d'au moins une extrémité (20C,22C) de la coquille (18C), afin de faciliter l'enfilage d'une amorce (TC) de la nappe (W), et des moyens d'étanchéité (41C) s'étendant dans le sens circonférentiel autour du conduit (24C) et s'étendant à partir de ce conduit (24C) jusqu'à la coquille perforée (18C), afin de diviser la chambre (38C) en une pluralité de cavités (43C,45C,47C) comprenant une première cavité (43C) adjacente à la première extrémité (20C) de la coquille (18C), et une cavité intermédiaire (47C) adjacente à la première cavité (43C), le moyen de restriction de l'écoulement (40C) comportant un registre commandable (42C) disposé dans le conduit (24C), ce registre (42C) pouvant être commandé pour restreindre l'écoulement de l'air à travers le conduit (24C), la pluralité de trous (28C-37C) connectant les cavités (43C,45C,47C) à la source de vide partiel (26C), le conduit (24C) étant connecté à la source de vide partiel (26C) à l'endroit de la première extrémité (20C) de la coquille (18C), caractérisé en ce que, lorsque l'appareil est utilisé dans une section de sécherie à un seul étage (10) de la machine à papier, les cavités comportent une seconde cavité (45C) adjacente à la seconde extrémité (22C) de la coquille (18C), la cavité intermédiaire (47C) étant disposée entre les première et seconde cavités (43C,45C), le conduit (24C) définit des première et seconde poches (62,64), la première poche (62) étant adjacente à la première extrémité (20C) de la coquille (18C), la seconde poche (64) étant adjacente à la seconde extrémité (22C) de la coquille (18C), le conduit (24C) définissant également un passage (66) s'étendent de la première poche à la seconde poche (62,64), et le registre commandable (42C) est disposé dans le conduit (66) de telle façon que, lorsque ce registre (42C) est fermé, un niveau de vide élevé soit produit dans la première poche (62) et dans la première cavité (43C) pour faciliter l'enfilage d'une amorce (TC) de la nappe (W),

et que, lorsque le registre (42C) est ouvert, un niveau de vide égal soit produit dans les première et seconde poches (62,64) et dans les première et seconde cavités (43C,45C), afin d'empêcher un flottement des bords latéraux de la nappe pendant le transit de la nappe (W) autour de la coquille (18C).

5. Procédé de transfert d'une nappe (W) s'étendent à travers une machine à papier, comprenant les étapes consistant à guider la nappe (W) autour d'une coquille perforée rotative (18) d'un appareil de transfert à cylindre à vide (10), la coquille ayant des première et seconde extrémités (20,22), à connecter les deux extrémités d'un conduit stationnaire (24), disposé à l'intérieur de la coquille (18) et s'étendent suivant la longueur de celle-ci, à une source de vide partiel (26), ce conduit (24) définissant une pluralité, de trous (28-37) suivant sa longueur de telle façon que le vide partiel soit créé dans une chambre (38) définie entre la coquille (18) et le conduit (24), cette chambre (18) étant divisée par des moyens d'étanchéité (41) en une pluralité de cavités (43,45,47) comprenant une première cavité (43) adjacente à la première extrémité (20) de la coquille (18) et une cavité intermédiaire (47) adjacente à la première cavité (43), à mettre en service un moyen à registre (42,44) disposé dans le conduit (24) afin de restreindre l'écoulement de l'air à travers le conduit (24) et à produire un niveau de vide plus élevé à l'endroit de l'une des extrémités (20,22) de la coquille (18) afin de faciliter l'enfilage d'une amorce (T) de la nappe (W), caractérisé en ce qu'il comprend les étapes consistant à fermer partiellement un premier registre (42) disposé à l'intérieur du conduit (24) en étant adjacent à la première extrémité (20) de la coquille (18), à fermer partiellement un second registre (44) disposé dans le conduit (24) en étant adjacent à la seconde extrémité (22) de la coquille (18), et à ouvrir une vanne de commande (50) disposée entre le second registre (44) et la source de vide partiel (26) de manière à produire un niveau de vide bas dans la cavité intermédiaire (47) et un niveau de vide plus élevé dans la première cavité (43) et dans une seconde cavité (45) qui est adjacente à la seconde extrémité (22) de la coquille (18), afin d'empêcher un flottement des bords latéraux de la nappe (W) pendant le transit de cette nappe (W) autour de la coquille (18) dans une section de sécherie à un seul étage (10).

FIG. 1

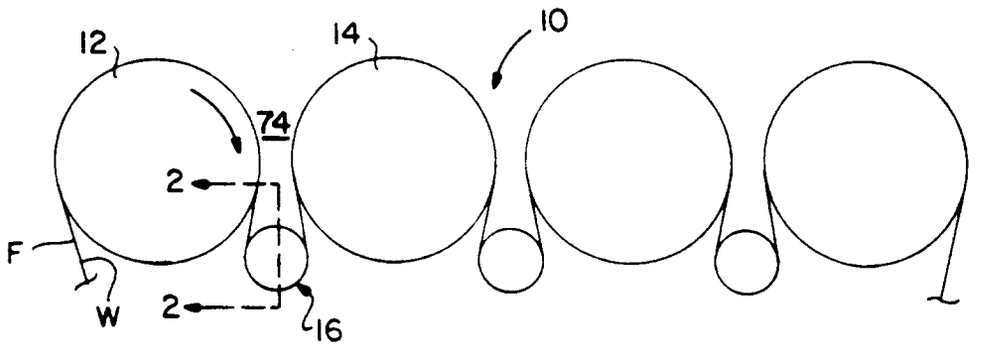

FIG. 2

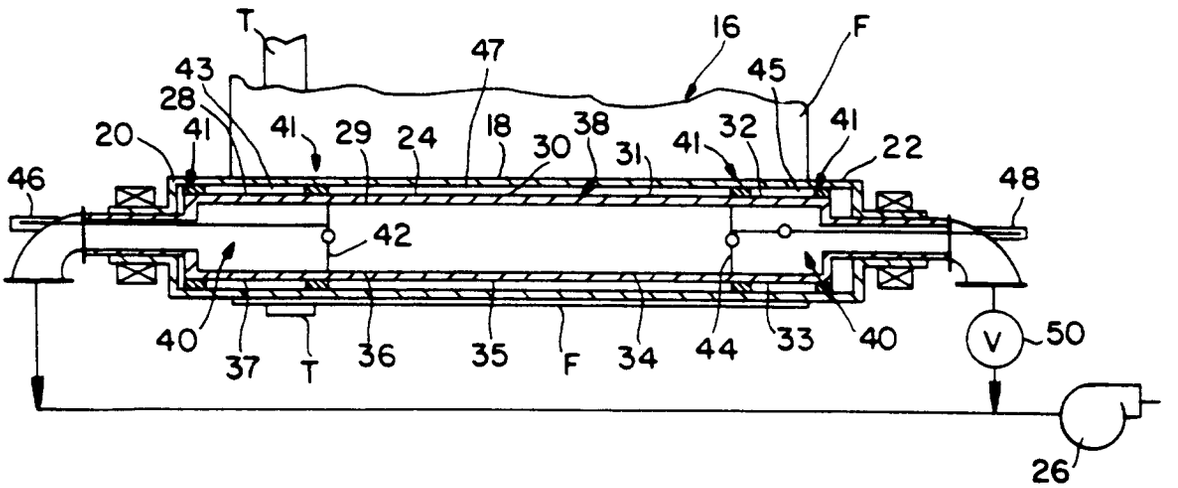

FIG. 3

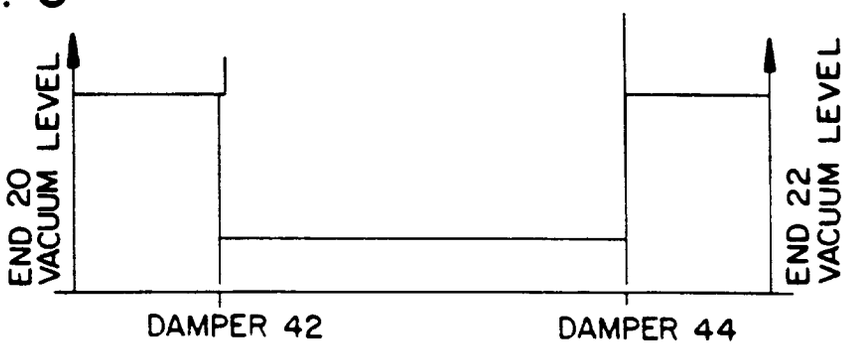

FIG. 4

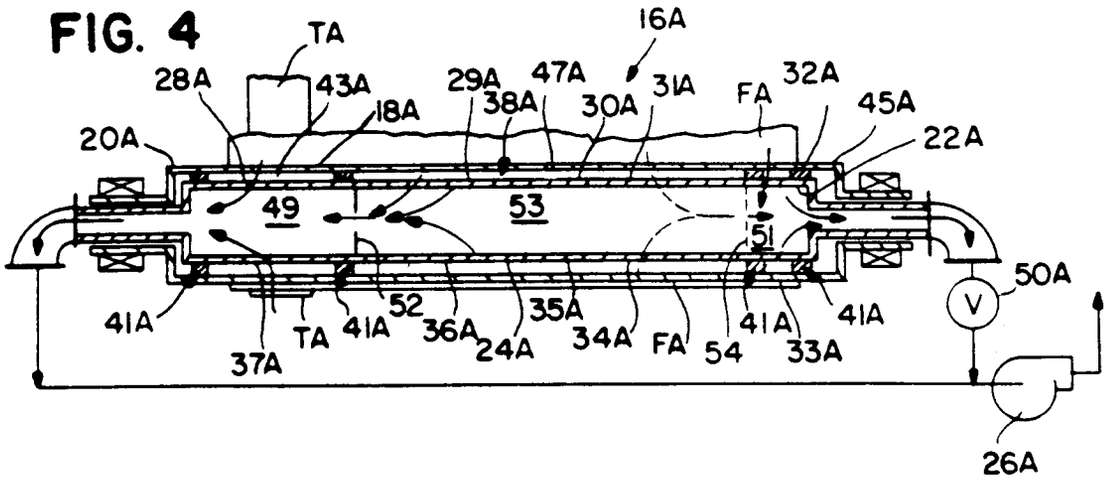

FIG. 5

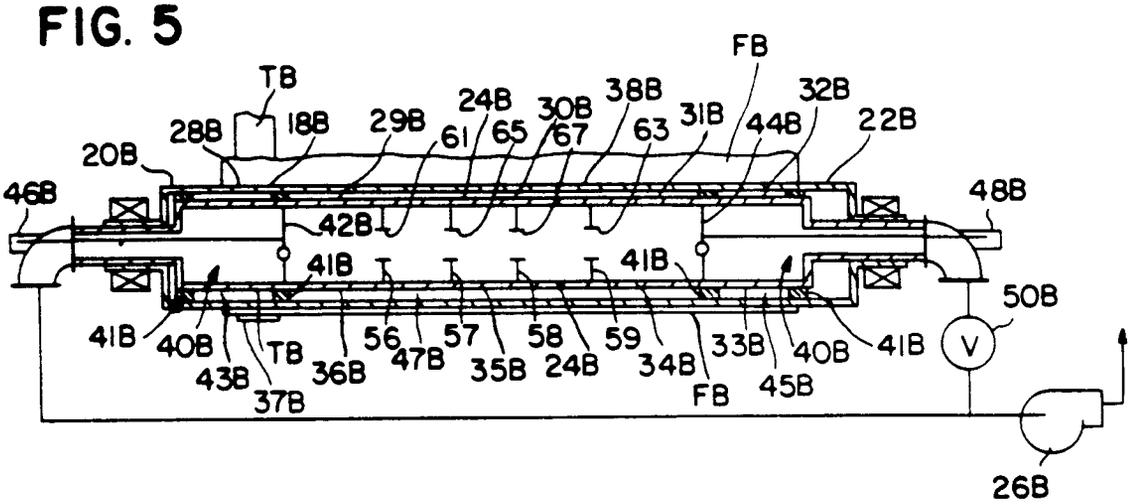

FIG. 6